CLAIMS

1. A recoding position deviation correcting apparatus, comprising:

a physical address position detection section for detecting a physical address position which is embedded on an optical disc;

a physical address position storing section for storing the physical address positions which were detected by the physical address position detection section;

a physical address position interval measuring section for measuring the detection interval between the physical address positions which were detected by the physical address position detecting section;

a physical address position interpolating section for interpolating the physical address positions from the physical address position information which is stored in the physical address position storing section and the interval between the physical address positions which were measured by the physical address position interval measuring section;

a sector top position detection section for detecting the top position of the respective sectors in the data which were recorded in the optical disc;

a recording position deviation correction control section for detecting the recording position deviation amount from the physical address positions which were detected by the physical

address position interpolation section using the physical address positions before performing additional recording processing which are stored in the physical address position storing section, and the sector top positions which were detected by the sector top position detection section, at carrying out an additional recording processing which records data continuously to the data region where the recording is already carried out on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction section for performing correction of the recording position of the data by the contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control section.

2. A recording position deviation correction apparatus as defined in claim 1, wherein;

the physical address position interval measuring section measures the detection interval between the physical addresses on the basis of the wobble signals which are recorded on the optical disc.

3. A recording position deviation correction apparatus as defined in claim 1, wherein

the physical address position interval measuring section measures the detection interval between the physical positions using a timer section.

4. A recording position deviation correction apparatus, comprising:

a physical address position detection section for detecting a physical address position embedded on an optical disc;

a physical address position storing section for storing the physical address positions which were detected by the physical address position detection section;

a sector top position detection section for detecting the top position of the respective sectors in the data which are recorded in the optical disc;

a sector top position storing section for storing the sector top positions which were detected by the sector top position detection section;

a recording position deviation correction control section for detecting the recording position deviation amount from the physical address position immediately before the additional recording processing which is stored in the physical address position storing section and the sector top position immediately before the additional recording processing which is stored in the sector top position storing section, at carrying out the additional recording processing which records data continuously

to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out the recording position deviation correction based on the detected recording position deviation amount to output the same; and

a recording position deviation correction section for performing correction of the recording position of the data by the contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control section.

5. A recording position deviation correction apparatus as defined in claim 4, further comprising:

a physical address position interval measuring section for measuring the detection interval between the physical address positions which were detected by the physical address position detecting section;

a physical address position interpolation section for interpolating the physical address positions from the physical address position information which is stored in the physical address position storing section and the interval between the physical address positions which were measured by the physical address position interval measuring section, to detect the physical address detection timing; and

a laser control section for controlling the output of the laser which is irradiated by the optical head so that the data

which has a high physical address position detection probability at the reproduction irregardless of the data to be recorded, at a physicaladdress detection timing that is detected by the physical address position interpolation section at final several sectors in the recording processing range.

6. A recoding position deviation correcting apparatus as defined in claim 5, wherein

the laser control section controls the output of the laser which is irradiated by an optical head so that a space is recorded irregardless of the data to be recorded, at the physical address detection timing at the final several sectors in the recording processing range.

7. A recording position deviation correction apparatus, comprising:

a laser control section for controlling the output of a laser which is irradiated by an optical head so that a laser light which has a high physical address detection probability irregardless of the data to be recorded is irradiated, at the physical address detection timing during the recording processing;

a physical address position detection section for detecting a physical address position which is embedded on an optical disc;

a physical address position storing section for storing the

physical address position which was detected by the physical address position detection section;

a physical address position interval measuring section for measuring the detection interval between the physical address positions which were detected by the physical address position detecting section;

a physical address position interpolating section for interpolating the physical address positions from the physical address position information which is stored in the physical address position storing section and the interval between the physical address positions which were measured by the physical address position interval measuring section, to detect the physical address detection timing;

a sector top position detection section for detecting the top position of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control section for detecting the recording position deviation amount from the physical address positions which were detected by the physical address position detection section from the reflected light caused by the laser light that is controlled by the laser control section and the sector top positions which were detected by the sector top position detection section, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an

optical disc, and generates a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction section for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control section.

8. A recoding position deviation correcting apparatus as defined in claim 7, wherein

the laser control section controls the optical head so that the laser of a power for a mark is irradiated irregardless of the data to be recorded, at the physical address detection timing during the recording processing.

9. A recording position deviation correction apparatus, comprising:

a physical address obtaining optical head for irradiating a laser of a constant power which does not influence on the recording processing, prior to irradiating the laser for performing a recording processing;

a physical address position detection section for detecting the physical address which is embedded on the optical disc from the reflection light which is received by the physical address

obtaining head;

a sector top position detection section for detecting the top position of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control section for detecting the recording position deviation amount from the physical address position that is detected by the physical address position detection section and the sector top position that is detected by the sector top position detection section, at carrying out the additional recording processing which records the data continuously to the data region where the recording is already performed an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction section for performing correction of the recording position of the data by the contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control section.

10. A recoding position deviation correcting apparatus as defined in claim 9, wherein

the physical address obtaining optical head always irradiates the laser power at the data reproduction.

11. A recording position deviation correction method, comprising:

a physical address position detection step for detecting a physical address position which is embedded on an optical disc;

a physical address position storing step for storing the physical address position which is detected by the physical address position detection step;

a physical address position interval measuring step for measuring the detection interval between the physical address positions which are detected by the physical address position detecting step;

a physical address position interpolating step for interpolating the physical address positions from the physical address position information which is stored in the physical address position storing step and the interval between the physical address positions which was measured by the physical address position interval measuring step;

a sector top position detection step for detecting the top position of the respective sectors in the data which is recorded in the optical disc;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position which is detected by the physical address position interpolation step using the physical address position before performing additional recording processing which was stored in the physical address position storing step, and the

sector top position which is detected by the sector top position detection step, at carrying out an additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generates a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control step.

12. A recording position deviation correction method, comprising:

a physical address position detection step for detecting a physical address position embedded on an optical disc;

a physical address position storing step for storing the physical address position which is detected by the physical address position detection step;

a sector top position detection step for detecting the top position of the respective sectors in the data which are recorded in the optical disc;

a sector top position storing step for storing the sector top position that is detected by the sector top position detection step;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position immediately before the additional recording processing which was stored in the physical address position storing step, and the sector top position immediately before the additional recording processing which was stored in the sector top position storing step, at carrying out an the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generates a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control step.

13. A recording position deviation correction method as defined in claim 12, wherein

a physical address position interval measuring section for measuring the detection interval between the physical address positions which were detected by the physical address position detecting step;

a physical address position interpolation step for

interpolating the physical address positions from the physical address position information which was stored in the physical address position storing step and the interval between the physical address positions which was measured by the physical address position interval measuring step, thereby to detect the physical address detection timing; and

a laser control step for controlling the laser output which is irradiated by the optical head, so that data which has a high physical address detection probability at the reproduction regardless of the recording data are recorded, at the physical address detection timing at the final several sectors within the recording processing range.

14. A recording position deviation correction method, comprising:

a laser control section for controlling the output of a laser which is irradiated by an optical head, so that data which has a high physical address detection probability at the reproduction regardless of the recording data are recorded, at the physical address detection timing during the recording processing;

a physical address position detection step for detecting a physical address position embedded on an optical disc;

a physical address position storing step for storing the physical address position which was detected by the physical address position detection step;

a physical address position interval measuring step for measuring the detection interval between the physical address positions which are detected by the physical address position detecting step;

a physical address position interpolation step for interpolating the physical address positions from the physical address position information which was stored in the physical address position storing step and the interval between the physical address positions, which was measured by the physical address position interval measuring step, to detect the physical address detection timing;

a sector top position detection step for detecting the top position of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position which was detected in the physical address position detection step from the reflected light caused by the laser light that is controlled by the laser control step, and the sector top position that is detected by the sector top position detection step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position

deviation amount; and

a recording position deviation correction step for carrying out correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted in the recording position deviation correction control step.

15. A recording position deviation correction method, comprising:

a physical address position detection step for detecting the physical address which is embedded on the optical disc from the reflection light that is obtained by irradiating a laser of a power which does not influence on the recording processing, prior to irradiating the laser for performing a recording processing;

a sector top position detection step for detecting the top position of the respective sectors in the data recorded in the optical disc;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position which was detected in the physical address position detection step and the sector top position that was detected in the sector top position detection step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction

based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted in the recording position deviation correction control step.

16. A recording position deviation correction program, making a computer execute:

a physical address position detection step for detecting a physical address position which is embedded on an optical disc;

a physical address position storing step for storing the physical address position which was detected in the physical address position detection step;

a physical address position interval measuring step for measuring the detection interval between the physical address positions which were detected in the physical address position detecting step;

a physical address position interpolation step for interpolating the physical address positions from the physical address position information which is stored in the physical address position storing step and the interval between the physical address positions, which was measured in the physical address position interval measuring step;

a sector top position detection step for detecting the top

position of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position which was detected in the physical address position interpolation step and the sector top position which is detected in the sector top position detection step, using the physical address position before performing additional recording processing which was stored in the physical address position storing step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control step.

17. A recording position deviation correction program, making a computer execute:

a physical address position detection step for detecting a physical address position which is embedded on an optical disc;

a physical address position storing step for storing the physical address position which was detected in the physical address position detection step;

a sector top position detection section for detecting the top position of the respective sectors in the data which is recorded in the optical disc;

a sector top position storing step for storing the sector top position that is detected by the sector top position detection step;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address position immediately before the additional recording processing which is stored in the physical address position storing step and the sector top position immediately before the additional recording processing which is stored in the sector top position storing step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction

control step.

18. A recording position deviation correction program as defined in claim 17, which further makes a computer operate:

a physical address position interval measuring step for measuring the detection interval between the physical address positions which were detected in the physical address position detecting step;

a physical address position interpolation step for interpolating the physical address positions from the physical address position information which was stored in the physical address position storing step and the interval between the physical address positions which were measured in the physical address position interval measuring step, thereby to detect the physical address detection timing; and

a laser control step for controlling the output of the laser which is irradiated by the optical head, so that data which has a high physical address detection probability at the reproduction are recorded irregardless of the data to be recorded, at the physical address detection timings which were detected in the physical address position interpolation step at the final several sectors in the recording processing range.

19. A recording position deviation correction program, which makes a computer execute:

a laser control step for controlling the output of a laser which is irradiated by an optical head, so that a laser which has a high physical address detection probability is irradiated irregardless of the data to be recorded, at the physical address detection timings during the recording processing;

a physical address position detection step for detecting a physical address position which is embedded on an optical disc;

a physical address position storing step for storing the physical address position which was detected in the physical address position detection step;

a physical address position interval measuring step for measuring the detection interval between the physical address positions which are detected by the physical address position detecting step;

a physical address position interpolation step for interpolating the physical address positions from the physical address position information which was stored in the physical address position storing step and the interval between the physical address positions, which were measured by the physical address position interval measuring step, thereby to detect the physical address detection timings;

a sector top position detection step for detecting the top positions of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control step for

detecting the recording position deviation amount from the physical address positions which were detected from the reflected light that is caused by the laser light controlled by the laser control step in the physical address position detection step, and the sector top position that was detected in the sector top position detection step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for performing correction of the recording position of the data by contraction/extension of the recording sector on the basis of the signal outputted from the recording position deviation correction control step.

20. A recording position deviation correction program, which makes a computer execute:

a physical address position detection step for detecting the physical address which is embedded on the optical disc from the reflection light that is obtained by irradiating a laser of a power which does not influence on the recording processing, prior to irradiating the laser for performing a recording processing;

a sector top position detection step for detecting the top

position of the respective sectors in the data which are recorded in the optical disc;

a recording position deviation correction control step for detecting the recording position deviation amount from the physical address positions which were detected in the physical address position detection step, and the sector top position which was detected in the sector top position detection step, at carrying out the additional recording processing which records data continuously to the data region where the recording is already performed on an optical disc, and generating a signal indicating to carry out recording position deviation correction based on the detected recording position deviation amount; and

a recording position deviation correction step for correcting the recording position of data by contraction/extension of the recording sector, on the basis of the signal that is obtained in the recording position deviation correction control step.